



Air Quality Permitting Statement of Basis

August 17, 2007

**Tier II Operating Permit
No. T2-050508**

Thompson Creek Mine, Clayton

Facility ID No. 037-00001

Prepared by:

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Air Quality Division**

PROPOSED

Table of Contents

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE	3
1. PURPOSE	4
2. FACILITY DESCRIPTION.....	4
3. FACILITY / AREA CLASSIFICATION	4
4. APPLICATION SCOPE	4
5. PERMIT ANALYSIS	4
6. PERMIT CONDITIONS.....	9
7. PUBLIC COMMENT	13
8. RECOMMENDATION	13
APPENDIX A	14
APPENDIX B	16

Acronyms, Units, and Chemical Nomenclature

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	Environmental Protection Agency
gpm	gallons per minute
gr	grain (1 lb = 7,000 grains)
HAPs	Hazardous Air Pollutants
hp	horsepower
IDAPA	A numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
m	meter(s)
MACT	Maximum Available Control Technology
MMBtu	Million British thermal units
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O ₃	ozone
PM	Particulate Matter
PM ₁₀	Particulate Matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTE	Potential to Emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	synthetic minor
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/yr	Tons per year
µg/m ³	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.400 through 410 Rules for the Control of Air Pollution in Idaho (Rules) for issuing Tier II operating permits (Tier II).

2. FACILITY DESCRIPTION

The Thompson Creek Mining Company operates an open pit molybdenum mine and concentrator in central Idaho. The operation produces 15-20 million pounds of molybdenum disulfide per year. Two types of concentrate are produced at the Thompson Creek facility, concentrate grade and lubricant grade. Concentrate grade is shipped off-site for further refining. Lubricant grade concentrate goes through additional processing steps to produce a higher purity product. High purity product is approximately 98 percent molybdenum disulfide.

3. FACILITY / AREA CLASSIFICATION

Thompson Creek is classified as a synthetic minor facility because the facilities potential to emit is limited to less than major source thresholds. The AIRS classification is “SM” synthetic minor.

The facility is located within AQCR 63 and UTM zone 11. The facility is located in Custer County which is designated as attainment/unclassifiable for all regulated criteria pollutants (PM₁₀, CO, NO_x, SO₂, lead, and ozone).

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at Thompson Creek. This required information is entered into the EPA AIRs database.

4. APPLICATION SCOPE

Thompson Creek has submitted an application to renew it's Tier II operating permit that expired December 8, 2004. Thompson creek has not proposed any changes to the facility.

Application Chronology

August 5, 2005	DEQ received application from Thompson Creek
September 8, 2006	DEQ determined the application incomplete
April 5, 2006	DEQ received updated application from Thompson Creek
June 19, 2006	DEQ determined the application complete
April 11, 2007	DEQ received additional application materials from Thompson Creek

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this Tier II.

5.1 Equipment Listing

Table 5.1 lists all permitted emission units at the facility.

Table 5.1 PERMITTED EMISSION UNITS

Source Description	Emissions Control(s)
<u>Portable Crusher</u> Manufacturer: Pioneer Model: 2036	Reasonable Control
<u>Primary Crusher</u> Manufacturer: GATX-Fuller Type: Gyratory Operating Capacity: 4,450 ton/hr	<u>Baghouse</u> Manufacturer: American Air Filter Model: Jet Pulse modular Fabripak
<u>Overland Conveyor Transfer</u> Manufacturer: GATX-Fuller	<u>Baghouse</u> Manufacturer: American Air Filter Model: Jet Pulse modular Fabripak
<u>East and West Ore Feeders</u> Type: Apron Feeders	<u>Wet Scrubber</u> Manufacturer: Ducon Model: Model IV
<u>Holoflite Dryer #1</u> Manufacturer: Holo Flite Model: D-1216-5	<u>Wet Scrubber</u> Manufacturer: Luftrol Model: KVS10 <u>ESP</u> Manufacturer: United Air Specialists Model: SH-10
<u>Lube Grade Dryer Stack</u> 1) Holoflite Dryer #2 Manufacturer: Joy-Denver Model: D1216-5 2) Rotary Kiln Dryers (2) Manufacturer: Christian Model: 12-13-16-UNI	Holoflite Dryer #2 and the Rotary Kiln Dryer each have a dedicated wet scrubber then each gas stream is combined and sent through an ESP <u>Holoflite Dryer #2</u> Wet Scrubber Manufacturer: Luftrol Model: KVS10 <u>Rotary Kiln Dryer</u> Wet Scrubber Manufacturer: Luftrol Model: KVS11 <u>Holoflite Dryer #2 & Rotary Kiln Dryer</u> ESP Manufacturer: United Air Specialists Model: SH-10
<u>Jet Mill</u> Pneumatic mill Manufacturer: Pulvafjet Mill Model: Aljet Model 810 CIHL	<u>Baghouse</u> Manufacturer: MikroPulsaire Model: 36-S-10-30
<u>Tech Fine Packaging Bin</u> High Purity Molybdenum Packaging	<u>Baghouse</u> Manufacturer: Mag-Pac Model: 52-65
<u>Pancake Mill Feed Bin</u> Pneumatically Convey High Purity Molybdenum	<u>Baghouse</u> Manufacturer: American Air Filter Model: AR35
<u>Super Fine Packaging Bin & Pancake Mill</u> Manufacturer: Jet Pulverizer Model: Micron-Master	<u>Baghouse</u> Manufacturer: Mag-Pac Model: 52-65
<u>Pebble Lime Baghouse</u>	<u>Baghouse</u>

Pneumatic transport system	Manufacturer: Dalamate
Boiler #1 Manufacturer: York Shippy Fuel Usage: 33 gallons per hour of fuel oil	<u>None</u>
Hot Oil Boiler Manufacturer: Parker Fuel Usage: 13.5 gallons per hour of fuel oil	<u>None</u>
Waste Oil Heaters 4 units Fuel Usage: 3.6 gallons per hour for each unit	<u>None</u>

5.2 Emissions Inventory

Table 5.2 gives a summary of the emission estimates provided by the applicant. DEQ reviewed and accepted the emission estimate calculations. The VOC emission inventory for the combustion sources provided in Table 5.2 were calculated by DEQ using AP-42 emission factors. The applicant's emission estimate calculations can be seen in the April 11, 2007 submittal which replaced the original submitted on April 5, 2006.

Table 5.2 EMISSION INVENTORY SUMMARY

Emission Unit	PM		PM ₁₀		VOC		CO		NO _x		SO ₂		HCl	
	lb/hr	t/yr	lb/hr	t/yr	lb/hr	t/yr	lb/hr	t/yr	lb/hr	t/yr	lb/hr	t/yr	lb/hr	t/yr
Waste Oil Heaters	.448	.62	.448	.62	.01	.08	.072	.1	.8	1.1	1.1	1.5		
Boiler #1	.076	.33	.076	.33	.02	.08	.17	.72	.66	2.9	2.3	10.3		
Hot Oil Heater	.031	.14	.031	.14	.008	.03	.068	.3	.27	1.18	.95	4.2		
Generator - Motivator	3.28	4.9	3.28	4.9	3.7	5.5	10.13	15.2	46.2	69.3	3.1	4.6		
Generator - Mill	.58	.14	.58	.14	.65	.16	1.8	4.5	8.2	2.1	.54	.14		
Generator - Pumpback	.99	.25	.99	.25	1.1	.28	3.1	.77	14	3.5	.92	.23		
Generator - Tailings Pump	2.8	.7	2.8	.7	3.14	.8	8.6	2.2	39.4	9.9	2.6	.65		
Primary Crusher	22.3	40.6	2.23	4.06										
Overland Conveyor	5.3	9.7	2.67	4.8										
East & West Ore Feeders	10	43.8	21.9	5										
Holoflite Dryer #1	.05	.19	.02	.08										
Lube Grade Dryer Stack	.001	.004	.001	.004										
Jet Mill	.016	.058	.016	.0576										
Tech. Fine Packaging	.013	.057	.013	.047										
Pancake Mill	.001	.002	.001	.002										
Super Fine Packaging	.024	.11	.024	.11										
Lime Silo	.26	.056	.11	.022										
Leach Plant													.003	.01
Gasoline/Diesel Storage						.75								
Total		102		21.3		6.9		23.8		90		21.6		.01

5.3 Modeling

Thompson Creek Mine provided an air pollutant dispersion model to DEQ for review. Details of that review can be seen in the memorandum included in Appendix B. A summary of the ambient impacts can be seen in Table 5.3.

Table 5.3 RESULTS OF IMPACT ANALYSIS

Pollutant	Averaging Period	Modeled Design Concentration (µg/m³)^b	Background Concentration (µg/m³)	Total Ambient Impact (µg/m³)	NAAQS^c (µg/m³)	Percent of NAAQS
PM ₁₀	24-hour	46.3	43	89.3	150	60%
	Annual	8.1	9.6	17.7	50	35%
SO ₂	3-hour	102.5	34	136.5	1,300	11%
	24-hour	32.4	26	58.4	365	16%
	Annual	2.5	8	10.5	80	13%
NO _{2f}	Annual	4.7	4.3	9.0	100	9%

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this Tier II permit.

IDAPA 58.01.01.400.....Procedures and Requirements for Tier II Operating Permits

Thompson Creek Mine Tier II operating permit expired on December 8, 2004 and the permittee has submitted an application to renew the permit.

IDAPA 58.01.01.200.....Procedures and Requirements for Permits to Construct

Thompson creek has not proposed a modification that would require a permit to construct; therefore these requirements do not apply to this permitting action.

IDAPA 58.01.01.210.....Preconstruction Compliance with Toxic Standards

Thompson creek has not proposed a modification that would trigger the preconstruction requirements of IDAPA 58.01.01.210.

IDAPA 58.01.01.006.30.....Designated Facility

Thompson Creek Mine and Mill are not defined as designated facilities.

IDAPA 58.01.01.300.....Requirements for Tier I Operating Permits.

Thompson Creek Mine is a synthetic minor Tier I facility because potential emission of nitrogen oxides and PM₁₀ are greater than 100 tons per year but permitted emission are less than 100 tons per year.

The facility does have permitted emission of 102 tons per year of particulate matter (PM). However, in accordance with EPA's October 16, 1995 guidance document, "[T]he Federal minimum for applicability of title V to sources of particulate matter should be based on the amount of emissions of PM-10, not particulate matter, that the source has the potential to emit." Thompson Creek Mine's potential to emit PM₁₀ emissions is 21.3 tons per year, therefore facility is a Tier I (title V) minor facility even though PM emissions are greater than 100 tons per year.

Fugitive emission do not count from the facility because it is not a designated facility and does not have emission units regulated by an NSPS or NESHAP prior to August 7, 1980

40 CFR 60.380Standards for Metallic Mineral Processing Plants

The provisions of this subpart are applicable to emission units defined as affected units that are constructed or modified after August 24, 1982. The following emission units were installed in 1989 and are defined as affected emissions units:

- Holoflite Dryer #2
- Rotary Kilns
- Jet Mill
- Pancake Mill
- Tech Fine Packaging Bin and Super Fine Packaging Bin
- Bucket elevators associated with the above listed equipment

All crushers at the mine were installed prior to August 24, 1982 and are not affected emission units.

In accordance with 40 CFR 60.382 the emission limits for affected emission units are:

- 0.05 grams of particulate matter per dry standard cubic meter
- 7% opacity for emissions units that are not controlled by a wet scrubber
- Fugitive particulate matter emissions are limited to 10% opacity

In accordance with 40 CFR 60.384 the monitoring requirements are for wet scrubbers only. These only apply only to the Holoflite Dryer #2 wet scrubber. Holoflite Dryer #1 utilizes a wet scrubber but it was installed in 1981 which is prior to the NSPS applicability date. The monitoring requirements are:

The permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber and a device for the continuous measurement of the scrubbing liquid flow rate to the scrubber. The pressure measuring device must be certified by the manufacturer to be accurate within plus or minus one inch of water and must be calibrated on an annual basis in accordance with manufacture's instructions. The scrubbing liquid flow rate monitor must be certified by the manufacturer to be accurate within plus or minus 5% of the design scrubbing liquid flow rate and must be calibrated on at least an annual basis in accordance with the manufacture's instructions.

In accordance with 40 CFR 60.385 Thompson Creek Mines shall report:

The permittee shall submit semiannual reports to DEQ of occurrences when the measurements of the scrubber pressure loss or liquid flow rate differ by more than plus or minus 30% from the average obtained during the most recent performance test. The reports shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

5.5 Fee Review

In accordance with IDAPA 58.01.01.407 the Tier II permit processing fee is \$10,000 because permitted emission are greater than 100 tons per year, and the facility is a synthetic minor facility. A summary of the permitted emissions is included in Table 5.4.

The facility is not a Tier I major facility therefore Tier I fees do not apply.

Table 5.4 TIER II PROCESSING FEE SUMMARY

Emissions Inventory	
Pollutant	Permitted Emissions (T/yr)
NO _x	90.0
PM ₁₀	21.3
PM	102.0
SO ₂	21.6
CO	23.8
VOC	6.9
HAPS/TAPS	0.0
Total:	265.6
Fee Due	\$ 10,000.00

5.6 Regional Review of Draft Permit

On July 19, 2007 the DEQ Idaho Falls Regional Office was provided a draft of the permit for review and comment. Comments were received and addressed.

5.7 Facility Review of Draft Permit

On July 23, 2007 Thompson Creek Mining Company was provided a draft permit for review. On August 15, 2007 DEQ received Thompson Creek's comments on the draft permit. The comments received were to more accurately describe the handling and storing of pebble lime and to clarify that the East and West Ore Feeders have their own stack. These changes are included in the permit.

6. PERMIT CONDITIONS

Facility-Wide Permit Conditions – Permit Section 2.

The Tier II operating permit has Facility-Wide permit conditions. These conditions are included in the permit in Section 2 of the permit.

Fugitive Emission (Permit Conditions 2.1-2.4)

Fugitive emission are required to be reasonably controlled consistent the Rules for the Control of Air Pollution in Idaho, IDAPA 58.0.01.651. To assure compliance the permit requires quarterly monitoring of fugitive emissions at the facility to determine if they are being reasonably controlled. The permittee shall also monitor and maintain records of the frequency and the method(s) used (i.e., water, chemical dust suppressants, etc.) to reasonably control fugitive emissions and shall record any fugitive dust complaints it receives and how the complaint was responded to. These compliance assurance requirements are consistent with all Tier II operating permits currently issued by DEQ.

Odors (Permit Conditions 2.5-2.6)

Permit Condition 2.5 is a quote of the Rules for the Control of Odors (IDAPA 58.01.01.775). To assure compliance the permittee is required to maintain records of all odor complaints received and if the complaint has merit, the permittee shall take appropriate corrective action as expeditiously as practicable. These compliance assurance requirements are consistent with all Tier II operating permits currently issued by DEQ.

Visible Emissions (Permit Condition 2.7-2.8)

Permit Condition 2.7 is a quote of the visible emission rule of IDAPA 58.01.01.625. Permit Condition 2.8 requires periodic compliance assurance by requiring visible emission to be observed once each quarter if any visible emissions are present from any point of emission, the permittee shall either take appropriate corrective action as expeditiously as practicable, or perform a Method 9 opacity test. These compliance assurance requirements are consistent with all Tier II operating permits currently issued by DEQ.

Open Burning (Permit Condition 2.9)

This permit condition is included to make the permittee aware that there are rules regarding open burning.

Reports and Certification (Permit Condition 2.10)

Permit Condition 2.10 informs the permittee of the address to submit any reports or notifications and makes clear that all information submitted to DEQ must be certified as true accurate and complete in accordance with IDAPA 58.01.01.123.

Obligation to Comply (Permit Condition 2.11)

The permittee is informed that this permit does not relieve the operator from the responsibility to comply with all applicable rules and regulations. This permit condition is included in all Tier II operating permits currently issued by DEQ.

Fuel Burning Equipment (Permit Condition 2.12)

Permit Condition 2.12 contains the particulate matter emission limits applicable to Thompson Creek Mine for fuel burning equipment. It has been demonstrated that for facilities combusting gas (natural or liquefied petroleum gas) and #2 fuel oil compliance assurance mechanisms are not warranted.

Sulfur Content in Fuels (Permit Conditions 2.13-2.15)

These permit conditions include the sulfur content limits in fuels specified by IDAPA 58.01.01.725. Permit Condition 2.15 requires that the permittee shall maintain documentation of supplier verification of distillate fuel oil content on an as-received basis. This permit conditions is consistent with all Tier II operating permits currently issued by DEQ and replaces the previous permits fuel sulfur content monitoring requirements.

Portable Crusher – Permit Section 3.

Emissions were estimated from the portable crushing operations while operating at maximum daily production rates. Annual emissions were estimated assuming that the portable rock crusher would not process more than 700,000 tons per any consecutive 12-months. Emissions from the primary and secondary crushers were stated to be controlled by water sprays and the emission estimates reflected this level of control.

The permit requires compliance with annual throughput of 700,000 tons and also requires that the emissions from the primary and secondary crusher be controlled by water spray to assure emissions are consistent with those estimated. This throughput limit remains unchanged from what the facility was previously permitted. Additionally, Facility-Wide Permit Condition 2.1 requires reasonable control of fugitive emissions.

The fugitive emission rate limits of the original permit are not included this permit.

Primary Crusher and Overland Transfer of Ore – Permit Section 4.

The permit limits the throughput to what was used in the emission estimates and requires that the baghouses be periodically inspected to assure that they are operating as designed. The throughput used in the emission inventory is 106,800 tons per calendar day and 16,242,500 tons per any consecutive 12-calendar month period. The throughput limitation remains unchanged from the previous permit. The original permit limited PM emissions; this permit contains only PM₁₀ emissions which also inherently limit PM emissions.

East and West Ore Feeders – Permit Section 5.

PM₁₀ emissions from the East and West Ore Feeders are limited to the emission rates that were estimated by Thompson Creek Mine and that were used in the air dispersion modeling which demonstrated compliance with the ambient standards. The original permit limited PM emissions; this permit contains only PM₁₀ emissions which also inherently limit PM emissions. The throughput limits remain unchanged from the original permit.

The venture scrubber pressure drop and scrubbing media flow rate are limited to the low range of values that the applicant stated that the scrubber operates at. Thompson Creek Mine may perform emissions testing at lower pressure drop and scrubbing liquid flow rates. If that emission testing shows compliance and DEQ approves the source test the operating limitation on pressure drop and scrubbing media flow rate may be lowered.

Holoflite Dryer #1 – Permit Section 6.

Thompson Creek Mine provided emission estimates on for the Holoflite Dryer #1 based on a methodology previously approved by DEQ. The estimated emissions are 0.02 pounds per hour and 0.08 tons per year. These estimated emission rates were not included in the permit because they are so small. Even if the emissions were to increase by 10 times the emissions would still be insignificant. However, the permit does require that the wet scrubber and the ESP are operated and maintained so that emissions remain insignificant.

Throughput is limited to what the applicant gave as the processing rate; the annual throughput remains the same as the original permit and the daily production increased from 160 tons per day to 247.7 tons per day. The scrubbing liquid flow rate to the wet scrubber is also limited consistent with the applicant's submittal. The permittee is required to inspect the electrostatic precipitator once per year to assure that it is operating as designed.

Holoflite Dryer #2 & Rotary Kilns – Permit Section 7.

Emission estimates are based on emissions testing conducted in on February 28, 2000. The measured emissions were 0.001 pounds per hour. Similar to the permit conditions for the Holoflite Dryer#1 the estimated emission rates were not included in the permit because they are so small. Even if the emissions were to increase by 10 times the emissions would still be insignificant. However, the permit does require that the wet scrubber and the ESP are operated and maintained so that emissions remain insignificant.

Throughput is limited to what the applicant gave as the processing rate and the scrubbing liquid flow rate to the wet scrubber is also limited. The throughput limit remains unchanged though is expressed in terms of tons per day instead of tons per hour. Holoflite Dryer #2 and the Rotary Kilns are affected emission units in accordance with 40 CFR 60.380 and must monitor and record the pressure drop and scrubbing liquid flow rate to the scrubber and report if the values vary by more than plus or minus 30% of the values measured during the most recent performance test. A copy of the most recent performance test is required to be maintained on site and made available to DEQ representatives upon request as a reasonable permit condition in accordance with IDAPA 58.01.01.211.

High Purity Molybdenum Milling and Packaging/ Lime Silo – Permit Section 8

All equipment that is used to mill and package high purity molybdenum are affected emission units in accordance with 40 CFR 60.380. Emissions from these affected units are controlled by a baghouse that can easily achieve the NSPS emission standard of 0.05 grams per dry standard cubic meter (.022 gr/dscf) as long as they are properly maintained. An emission testing was conducted on the affected emissions and emissions were found to be insignificant. The emission test results are summarized in Table 6.1.

Table 6.1 SUMMARY OF EMISSION TEST RESULTS

Source	Measured PM and Assumed Equivalent to PM ₁₀ (lb/hr)	Date of Emissions Test
Jet Mill Baghouse	0.016	October 27-28, 1998
Tech Fine Packaging Bin Baghouse	0.013	October 27-28, 1998
Pancake Mill Feed Bin Baghouse	0.001	May 25, 1999
Super Fine Packaging Bin Baghouse	0.024	May 26, 1999

Pound per hour and ton per year emission limits are not included in the permit for PM₁₀. Even if emissions were to increase by 10 times emission rates would remain insignificant. Ongoing compliance and with the NSPS grain loading standard is assured by requiring the baghouses to be inspected periodically to assure that they are operated and maintained as designed.

For modeling purposes emission from the lime silo were estimated to be 0.11 pounds per hour and were assumed to occur every hour of the day. This is conservative estimate because the lime silo only operates periodically. The permit requires maintaining and operating a baghouse to control emissions on the lime silo to assure compliance with the emission rate that was modeled.

Electrical Generator Sets – Permit Section 9

The permittee estimated and modeled emissions from the Tailings Pump, Mill Auxiliary and Pump Back emergency generators assuming they operate at maximum capacity for 500 hours during any consecutive 12-months, and that the motivator emergency generator operated 3,000 hours during any consecutive 12-months. These hours of operation are limited in the permit to assure emissions are consistent with those that were modeled and to limit the facility's potential to emit below major facility thresholds.

Leach Plant Scrubber – Permit Section 10

Measured HCl emissions from the leach plant scrubber are 0.003 pound per hour. If the scrubber operates at 99.9 percent control efficiency there is a potential that uncontrolled emissions would exceed 10 tons per year, the HAP major facility threshold. Therefore the permit requires that the wet scrubber be operated and monitored to assure that HCl emissions do not exceed 10 tons per year. Measured emission rates are so small that even an increase in emissions by a factor of 700 would not exceed 10 tons per year (assuming the leach plant operated 8760 hours per year). However under these same assumptions if the scrubber is not operated at all emission may exceed 10 tons per year. The important thing is that the permittee operate a caustic wet scrubber to control emissions, the exact operating parameters are not as important as it is that a caustic scrubber be operated and the scrubbing liquid and pH be monitored and maintained at values established by the permittee. Scrubbing liquid flow rate may be measured directly or by monitoring pump amps, impeller speed or any other indicator of flow rate.

Boiler, Hot Oil Heater and Waste Oil Heaters

Emissions from the Boiler, Hot Oil Heater and Waste Oil Heaters were estimated without restrictions on the potential to emit. Therefore, since the emission estimates and modeling analyses were conducted assuming worst case emissions it is not necessary to have operating restrictions or specific emission rate limits in the permit for these emissions units.

7. PUBLIC COMMENT

In accordance with IDAPA 58.01.01.404.01.c, a public comment period on the proposed Tier II operating permit will be provided.

8. RECOMMENDATION

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue proposed Tier II operating permit to Thompson Creek Mining Company. An opportunity for public comment on the air quality aspects of the proposed permit shall be provided in accordance with IDAPA 58.01.01.404.01.c.

DPP/xx Permit No. P-050508

Appendix A
AIRS Information
T2-050508

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

Facility Name: Thompson Creek Mine
Facility Location: Clayton, Idaho
AIRS Number: 037-00001

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO ₂	B							u
NO _x	SM					SM		u
CO	B							u
PM ₁₀	SM		SM					u
PT (Particulate)	SM							u
VOC	B							u
THAP (Total HAPs)	SM						SM	u
			APPLICABLE SUBPART					
			LL					

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Modeling Review

T2-050508

MEMORANDUM

DATE: May 31, 2007

TO: Dan Pitman, P.E., Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: T2-050508

SUBJECT: Modeling Review for Thompson Creek Mining Company, Tier II Permit Renewal Application for their facility near Clayton, Idaho.

1.0 Summary

Thompson Creek Mining Company (TCMC) submitted a Tier II Operating Permit application to renew the facility's Tier II Operating Permit No. 037-00001, which expired on December 22, 2004. The application was received on April 5, 2006.

The application's modeling analysis addressed demonstrating compliance with the National Ambient Air Quality Standards (NAAQS). A compliance demonstration for toxic air pollutants (TAPs) is not applicable to this permitting project.

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
A revised point source PM ₁₀ emission inventory was modeled by DEQ with the following changes: <ul style="list-style-type: none">Four waste oil heaters located in the Truck Shop and Wash Bay with emissions of 0.11 lb/hr each were included in DEQ's verification modeling run.Emissions from the East and West Ore Feeders were increased from 0.5 lb/hr each to 2.5 lb/hr each.Emissions from Boiler #1 and the Hot Oil Boiler were each increased less than 0.01 lb/hr. Inclusion of the four waste oil heaters and the increase in the PM ₁₀ emission rates for the East and West Ore Feeders resulted in a negligible increase in ambient impacts for the 24-hour PM ₁₀ NAAQS.	PM ₁₀ emissions from the East and West Ore Feeders are each controlled by venturi scrubbers with 95% control efficiency for PM ₁₀ . Based upon the DEQ verification modeling results using the revised PM ₁₀ emission inventory and new waste oil heater point source data, and the ambient impacts presented by Thompson Creek's modeling demonstration, DEQ did not revise and re-run modeling scenarios for the SO ₂ , NO _x , CO, and annual PM ₁₀ NAAQS. The results of modeling the revised PM ₁₀ emissions inventory to include the waste heaters that were not included in Thompson Creek's modeling demonstration and the increased emissions from the East and West Ore Feeders demonstrates that the facility's ambient impacts for PM ₁₀ are not close to the 24-hour and annual PM ₁₀ NAAQS. Pollutant-specific emissions limits are not recommended based on modeling.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The TCMC facility is located in Custer County, designated as an unclassifiable or attainment area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), ozone (O₃), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀). There are no Class I areas within 10 kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

A significant impact analysis is not required for a Tier II permit renewal unless a modification is proposed as part of the application. However, TCMC submitted a significant contribution analysis to with this application, in part, to determine whether results from a full impact analysis would be presented

If estimated maximum pollutant impacts to ambient air from the emissions sources at the facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.90, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels ^a (µg/m ³) ^b	Regulatory Limit ^c (µg/m ³)	Modeled Value Used ^d
PM ₁₀ ^e	Annual	1.0	50 ^f	Maximum 1 st highest ^g
	24-hour	5.0	150 ^h	Maximum 6 th highest ⁱ
Carbon monoxide (CO)	8-hour	500	10,000 ^j	Maximum 2 nd highest ^k
	1-hour	2,000	40,000 ^l	Maximum 2 nd highest ^k
Sulfur Dioxide (SO ₂)	Annual	1.0	80 ^f	Maximum 1 st highest ^g
	24-hour	5	365 ^j	Maximum 2 nd highest ^k
	3-hour	25	1,300 ^j	Maximum 2 nd highest ^k
Nitrogen Dioxide (NO ₂)	Annual	1.0	100 ^f	Maximum 1 st highest ^g
Lead (Pb)	Quarterly	NA	1.5 ^h	Maximum 1 st highest ^g

^aIDAPA 58.01.01.006.90

^bMicrograms per cubic meter

^cIDAPA 58.01.01.577 for criteria pollutants

^dThe maximum 1st highest modeled value is always used for significant impact analyses

^eParticulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

^fNever expected to be exceeded for any calendar year

^gConcentration at any modeled receptor

^hNever expected to be exceeded more than once in any calendar year

ⁱConcentration at any modeled receptor when using five years of meteorological data

^jNot to be exceeded more than once per year

2.1.3 TAPs Analyses

There are no increases in TAPs emissions for this project. Therefore, IDAPA 58.01.01.210 does not apply, and additional analyses are not required to demonstrate compliance with the toxic air pollutant (TAP) increments.

2.2 Background Concentrations

Ambient background concentrations were revised for all areas of Idaho by DEQ in March 2003¹. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations used in these analyses are listed in Table 3. Background concentrations for NO₂, SO₂, and PM₁₀ were based on small rural remote non-agricultural default values. Background concentrations for CO are not listed because the maximum design concentrations from the significant impact analysis did not exceed the significant contribution levels listed above in Table 3.

Table 3. BACKGROUND CONCENTRATIONS		
Pollutant	Averaging Period	Background Concentration (µg/m ³) ^a
PM ₁₀ ^b	24-hour	43
	Annual	9.6
NO ₂ ^c	Annual	4.3
SO ₂ ^d	3-hour	34
	24-hour	26
	Annual	8

^a Micrograms per cubic meter

^b Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

^c Nitrogen dioxide

^d Sulfur dioxide

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used in the DEQ verification analyses.

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

Table 4. MODELING PARAMETERS		
Parameter	Description/ Values	Documentation/Additional Description
Model	ISC3-PRIME	ISC3PBEE (ISCST3 with the PRIME algorithm, version 04272) for the 24-hour PM ₁₀ verification run.
Meteorological data	1987-1991 Surface Data and Upper Air Data	Surface meteorological data was from the Pocatello, Idaho airport and the upper air meteorological data was from the Boise, Idaho Airport. The anemometer height was correctly set to 6.1 meters.
Land Use (urban or rural)	Rural	Rural dispersion coefficients were used based on the surrounding land use being a remote mountainous area
Terrain	Considered	Receptor 3-dimensional coordinates were utilized. Each receptor was assigned an elevation. DEQ did not re-import the DEM files.
Building downwash	Downwash algorithm	Building dimensions obtained from modeling files submitted, and BPIP was used to evaluate downwash effects.
Receptor grid	Grid 1	25-meter spacing along the ambient air boundary and outward 500 meters beyond the ambient air boundary
	Grid 2	100-meter spacing from 500 meters to a distance of 2,000 meters beyond the ambient air boundary
	Grid 3	250-meter spacing from 2,000 meters to 5,000 meters beyond the ambient air boundary

3.1.1 Modeling protocol

A protocol was submitted by The RETEC Group, Inc. (RETEC) on behalf of TCMC, on March 13, 2006 prior to submission of the modeling demonstration. The modeling protocol was approved with comments by DEQ on March 23, 2006. Modeling was conducted using methods listed in the modeling protocol and those required by the *State of Idaho Air Quality Modeling Guideline*.

3.1.2 Model Selection

TCMC used ISCST3 to conduct the final ambient air impact analyses for this project. This permit application was submitted to DEQ prior to the deadline requiring the use of AERMOD as the guideline model. DEQ agrees that use of the PRIME downwash algorithm was not needed to estimate worst-case ambient impacts due to building downwash.

3.1.3 Meteorological Data

Pocatello surface data and Boise upper air meteorological data were used for the TCMC site near Clayton.

TCMC had collected on-site meteorological data, but RETEC determined that the meteorological dataset was not representative of actual conditions at the site and was missing certain data elements. DEQ supplied the alternative met data used for this analysis. All mixing height values were set to a value of 50 meters if PCRAMMET calculated lower mixing height values.

3.1.4 Terrain Effects

The modeling analyses submitted by TCMC considered elevated terrain. The elevation was assigned to each receptor. Elevations of emission sources, buildings, and receptors were not regenerated from DEM files for DEQ's verification analyses.

3.1.5 Facility Layout

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the modeling input to satellite images of the site obtained from the Google Earth internet site to confirm the facility layout.

3.1.6 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses. The Building Profile Input Program (BPIP) was used by the applicant to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters for ISCST3. ISCST3 identified the effects of structure-induced downwash on predicted ambient impacts.

DEQ used ISCST3 with the PRIME algorithm and BPIP-PRIME to verify there were no effects on the ambient impact design concentrations from building downwash in the verification analyses. This is consistent with the comments DEQ provided to RETEC in the modeling protocol approval. DEQ's analysis confirmed that higher predicted ambient impacts did not occur at receptors along the ambient air boundary. RETEC's use of ISCST3 is valid for this application.

3.1.7 Ambient Air Boundary

Ambient air was determined by TCMC to exist exterior to the boundary of the patented and unpatented mill sites. Portions of the facility are fenced and access by roads is controlled by locked or guarded gates. It is assumed that the mining operation personnel monitor and restrict access into the open pit mining region of the site. TCMC also states that the remoteness, steepness of terrain, and distance from accessible roadways were considered in determining the facility ambient air boundary. DEQ approves of this ambient air boundary.

3.1.8 Receptor Network

The receptor grids used by TCMC met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ verification analyses were conducted using the same receptor grid.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used for DEQ verification modeling:

- All modeled criteria air pollutant emissions rates were equal to or greater than the facility's emissions calculated in the Tier II permit application or requested permit allowable emission rates.

Tables 5 and 6 list the criteria air pollutant emissions rates for sources included in the dispersion modeling analyses for short term and annual averaging periods, respectively. The emission rates listed in Table 6 were used by TCMC in their modeling analysis. Daily emissions were modeled by TCMC for 24 hours. Annual emissions were modeled over 8,760 hours per year.

Table 5. MODELED CRITERIA POLLUTANT SHORT-TERM EMISSIONS RATES				
Source ID	Description	Emission Rates (lb/hr ^a)		
		PM ₁₀ ^b , 24-hr avg	SO ₂ ^c , 3-hr avg and SO ₂ , 24-hr avg	CO ^d , 1-hr avg and CO, 8-hr avg
PRIMCRUS	Primary Crusher	2.22	NA ^e	NA
OVERCONV	Overland Conveyor	2.67	NA	NA
EASTORE	East Ore Feeder	2.50	NA	NA
WESTORE	West Ore Feeder	2.50	NA	NA
HOLODRYR	Holoflite Dryer #1	0.018	NA	NA
LUBEDRYR	Holoflite Dryer #2, Rotary Kiln, Lube Grade Dryer Stack	0.0008	NA	NA
JETMILL	Jet Mill Baghouse Stack	0.016	NA	NA
PANMILL	Pancake Mill Feed Bin Baghouse Stack	0.0008	NA	NA
PEBBLELM	Pebble Lime Baghouse	0.11	NA	NA
BOILER#1	Boiler #1	0.08	2.34	0.17
HOTOIL	Hot Oil Boiler	0.031	0.96	0.067
MOTIVATR	Motivator	3.28	3.06	10.13
MILL AUX	Mill Auxiliary Generator	0.58	0.54	1.80
PUMPBACK	Pumpback Generator	0.99	0.92	3.06
TAILPUMP	Tailings Pump Generator	2.80	2.61	8.65
PACKBIN	Tech Fine Packaging	0.013	NA	NA
SFSTOR	Super Fine Packaging Bin Baghouse	0.024	NA	NA
ORE DROP	Ore Drop to Mill Stockpile	6.79	NA	NA
PTC AREA	Portable Crusher	14.96	NA	NA
PTC LOAD	Truck Dump to Primary Crusher	0.71	NA	NA
WOILHTR1 ^f	Waste Oil Heater #1	0.11	0.25	0.018
WOILHTR2 ^f	Waste Oil Heater #2	0.11	0.25	0.018
WOILHTR3 ^f	Waste Oil Heater #3	0.11	0.25	0.018
WOILHTR4 ^f	Waste Oil Heater #4	0.11	0.25	0.018

^a Pounds per hour

^b Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

^c Sulfur dioxide

^d Carbon monoxide

^e Not applicable—pollutant not emitted by this source

^f Emission unit included by DEQ in verification modeling based on Thompson Creek's April 11, 2007 submittal

Table 6. MODELED CRITERIA POLLUTANT ANNUAL EMISSIONS RATES				
Source ID	Description	Emission Rates (lb/hr ^a)		
		PM ₁₀ ^b , annual avg	SO ₂ ^c , annual avg	NO _x ^c , annual avg
PRIMCRUS	Primary Crusher	0.93 (2.22) ^g	NA ^e	NA
OVERCONV	Overland Conveyor	1.11 (2.67) ^g	NA	NA
EASTORE	East Ore Feeder	0.50 (2.50) ^g	NA	NA
WESTORE	West Ore Feeder	0.50 (2.50) ^g	NA	NA
HOLODRYR	Holofite Dryer #1	0.018	NA	NA
LUBEDRYR	Holofite Dryer #2, Rotary Kiln, Lube Grade Dryer Stack	0.001 (0.0008) ^g	NA	NA
JETMILL	Jet Mill Baghouse Stack	0.013 (0.016) ^g	NA	NA
PANMILL	Pancake Mill Feed Bin Baghouse Stack	0.00 (0.008) ^g	NA	NA
PEBBLELM	Pebble Lime Baghouse	0.005 (0.11) ^g	NA	NA
BOILER#1	Boiler #1	0.066 (0.08) ^g	2.34	0.66
HOTOIL	Hot Oil Boiler	0.027 (0.031) ^g	0.96	0.27
MOTIVATR	Motivator	1.12 (3.28) ^g	1.05	15.82
MILLAUX	Mill Auxiliary Generator	0.033 (0.58) ^g	0.031	0.47
PUMPBACK	Pumpback Generator	0.056 (0.99) ^g	0.052	0.80
TAILPUMP	Tailings Pump Generator	0.16 (2.80) ^g	0.15	2.25
PACKBIN	Tech Fine Packaging	0.010 (0.013) ^g	NA	NA
SFSTOR	Super Fine Packaging Bin Baghouse	0.024	NA	NA
ORE DROP	Ore Drop to Mill Stockpile	2.83 (6.79) ^g	NA	NA
PTC AREA	Portable Crusher	5.98 (14.96) ^g	NA	NA
PTC LOAD	Truck Dump to Primary Crusher	0.28 (0.71) ^g	NA	NA
WOILHTR1 ^f	Waste Oil Heater #1	0.11	0.25	0.20
WOILHTR2 ^f	Waste Oil Heater #2	0.11	0.25	0.20
WOILHTR3 ^f	Waste Oil Heater #3	0.11	0.25	0.20
WOILHTR4 ^f	Waste Oil Heater #4	0.11	0.25	0.20

^a Pounds per hour

^b Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

^c Sulfur dioxide

^d Nitrogen dioxide (all NO_x assumed to be NO₂)

^e Not applicable—pollutant not emitted by this source

^f Emission unit included by DEQ in verification modeling based on Thompson Creek's April 11, 2007 submittal

^g Emission rate in parentheses modeled by DEQ for annual PM₁₀ NAAQS compliance verification

3.3 Emission Release Parameters

Table 7 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources. Table 8 lists the emission release parameters for volume sources. Values used in the analyses appeared reasonable and within expected ranges. Additional documentation for the verification of these parameters was not required.

The exhaust parameters for Boiler #1 and the Hot Oil Boiler were listed in the permit application as having vertical, uninterrupted releases, but the exit velocity for each source was set to 0.001 meters per second in the modeling file by TCMC to either reflect a horizontal or being equipped with a raincap.

Exit diameter values for the Overland Conveyor, Tailings Pump, Pancake Mill Feed Bin Baghouse, and Super Fine Packaging Bin Baghouse were each set to 0.001 meters in the modeling file by TCMC. The stack data in the emission inventory reflects larger exit diameters than the values used in the modeling demonstration. The exit velocity for each of these sources was properly set to 0.001 meters per second due to a horizontal release orientation.

DEQ did not require the applicant to resolve the differences in exit velocities and diameters because the values used in the model generally cause the most conservative ambient impact predictions, and the predicted ambient impacts were not close to any ambient air quality standard.

Table 7. POINT SOURCE STACK PARAMETERS

Release Point	Release Point Description	Stack Height (m) ^a	Modeled Stack Diameter (m)	Stack Gas Temp (K) ^b	Stack Gas Flow Velocity (m/sec) ^c
PRIMCRUS	Primary Crusher	20.0	0.71	0	21.4
OVERCONV	Overland Conveyor	3.1	0.001	0	0.001 ^d
EASTORE	East Ore Feeder	26.0	0.47	286	17.8
WESTORE	West Ore Feeder	26.0	0.47	286	17.8
HOLODRYR	Holoflite Dryer #1	24.7	0.30	300	4.4
LUBEDRYR	Holoflite Dryer #2, Rotary Kiln, Lube Grade Dryer Stack	27.5	0.20	294	7.3
JETMILL	Jet Mill Baghouse Stack	11.4	0.38	299	0.001 ^e
PANMILL	Pancake Mill Feed Bin Baghouse Stack	4.5	0.001	299	0.001 ^d
PEBBLELM	Pebble Lime Baghouse	21.0	0.31	0	12.9
BOILER#1	Boiler #1	25.6	0.31	533	0.001
HOTOIL	Hot Oil Boiler	25.6	0.31	533	0.001
MOTIVATR	Motivator Generator	4.6	0.10	755	135.4
MILLAUX	Mill Auxiliary Generator	6.1	0.15	922	0.001 ^e
PUMPBACK	Pumpback Generator	3.7	0.15	755	62.9
TAILPUMP	Tailings Pump Generator	4.6	0.001	755	0.001 ^d
PACKBIN	Tech Fine Packaging	11.6	0.001	300	0.001 ^d
SFSTOR	Super Fine Packaging Bin Baghouse	7.6	0.001	296	0.001 ^d
WOILHTR1 ^f	Waste Oil Heater #1	7.6	0.20	405	0.001 ^d
WOILHTR2 ^f	Waste Oil Heater #2	7.6	0.20	405	0.001 ^d
WOILHTR3 ^f	Waste Oil Heater #3	7.6	0.20	405	0.001 ^d
WOILHTR4 ^f	Waste Oil Heater #4	7.6	0.20	405	0.001 ^d

^a Meters

^b Kelvin

^c Meters per second

^d Horizontal release

^e Capped release

^f Emission unit included by DEQ in verification modeling based on Thompson Creek's April 11, 2007 submittal

Table 8. VOLUME SOURCE RELEASE PARAMETERS

Release Point	Description	Release Height (m) ^a	Horizontal Dimension (m)	Vertical Dimension (m)
ORE DROP	Ore Drop to Mill Stockpile	67.5	0.4	2.5
PTC AREA	Portable Crusher	0	11.6	2.1
PTC LOAD	Truck Dump to Primary Crusher	0	0.7	1.1

^a Meters

3.4 Results for Significant and Full Impact Analyses

3.4.1 Significant Impact Analysis

A significant contribution analysis was submitted for this application that addressed facility-wide emissions, except for the four waste oil heaters. Inclusion of the waste oil heaters in the modeling demonstration is not anticipated to cause the maximum carbon monoxide ambient impacts to exceed the

significant contribution levels for that pollutant, and DEQ did not remodel CO emissions for this project. The results of TCMC's significant contribution analyses are listed in Table 9.

Table 9. SIGNIFICANT CONTRIBUTION ANALYSES				
Pollutant	Averaging Period	Maximum Ambient Concentration ^a (µg/m ³) ^b	Significant Contribution Level (µg/m ³)	Is Maximum Ambient Impact Greater Than The Significant Contribution Level?
PM ₁₀ ^d	24-hour	96.7	5	Yes
	Annual	3.8	1	Yes
SO ₂ ^e	3-hour	102.5	25	Yes
	24-hour	32.4	5	Yes
	Annual	2.5	1	Yes
NO ₂ ^f	Annual	4.7	1	Yes
CO ^g	1-hour	393.3	2,000	No
	8-hour	194.2	500	No

^a Highest 1st high value

^b Micrograms per cubic meter

^c National ambient air quality standards

^d Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^e Sulfur dioxide

^f Nitrogen dioxide

^g Carbon monoxide

3.4.2 Full Impact Analysis

TCMC submitted a full impact analysis for SO₂, PM₁₀, and NO_x emissions. DEQ re-ran the modeling demonstration for PM₁₀, 24-hour and annual averaging periods and included the four waste oil heaters in the modeling inventory. DEQ's highest 1st high value matched TCMC's value. The PM₁₀ 24-hour average emission inventory was run by DEQ for the annual averaging period, which is a conservative approach. The resulting annual ambient impacts were not close to the NAAQS even when using DEQ's worst-case methods.

DEQ did not re-run the model for any other pollutants. All design concentrations used by TCMC are highest 1st high values. This is conservative for all short-term averaging periods. TCMC's and DEQ's results are shown in Table 10. All NO_x emissions were assumed to be emitted as NO₂. The maximum ambient impact for CO emissions did not exceed the significant contributions levels, so a full impact analysis was not conducted for this pollutant.

Table 10. RESULTS OF FULL IMPACT ANALYSES						
Pollutant	Averaging Period	Modeled Design Concentration ^a ($\mu\text{g}/\text{m}^3$) ^b	Background Concentration ($\mu\text{g}/\text{m}^3$)	Total Ambient Impact ^a ($\mu\text{g}/\text{m}^3$)	NAAQS ^c ($\mu\text{g}/\text{m}^3$)	Percent of NAAQS
PM ₁₀ ^d	24-hour	96.7 ^e (46.3) ^h	43	139.7 (89.3)	150	93% (60%) ^h
	Annual	3.8 (8.1) ⁱ	9.6	13.4 (17.7) ⁱ	50	27% (35%) ⁱ
SO ₂ ^e	3-hour	102.5	34	136.5	1,300	11%
	24-hour	32.4	26	58.4	365	16%
	Annual	2.5	8	10.5	80	13%
NO ₂ ^f	Annual	4.7	4.3	9.0	100	9%

^a Values in parentheses were obtained from DEQ verification modeling using ISC3PBEE, version 04272.

^b Micrograms per cubic meter

^c National ambient air quality standards

^d Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^e Sulfur dioxide

^f Nitrogen dioxide

^g TCMC used the highest first high value as a design concentration

^h DEQ verification analysis result for PM₁₀, 24-hour average, design concentration is the highest 6th high value with 5 years of met data

ⁱ DEQ verification analysis result for PM₁₀, annual average, first high value, using the worst-case 24-hour PM₁₀ emissions inventory instead of the annual emissions inventory submitted by TCMC

4.0 Conclusions

The ambient air impact analysis submitted, in combination with DEQ's verification analyses, demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application, will not cause or significantly contribute to a violation of any air quality standard.